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LISTS OF SPECIES

Anurans, Northern Tocantins River Basin, states of Tocantins and Maranhão, Brazil.

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Abstract: This study presents a list of anurans in the northern region of the Tocantins River Basin (states of Tocantins and Maranhão), with information regarding seasonality, habitat, and microhabitat. We recorded 38 species in 15 genera and seven families. Most species (47 %) occurred exclusively in open areas and only 11 % of the species were found in forest habitats. Around 82 % of species were observed in ponds and only 7 % occurred in streams. Regarding seasonality, 54 % were observed both in the rainy and dry seasons. The northern area of the Cerrado has being rapidly converted in monocultures and information on its anuran fauna is limited. Additional information on its biodiversity is needed in order to provide the framework for conservation strategies.

Introduction

Tocantins River has its headwaters in the state of Goiás (GO), central Brazil, flowing northward through the Cerrado biome, from the state of Tocantins to the state of Maranhão. To the north, it runs along the border between these two states, and then it enters in the state of Pará, where it reaches the Marajó Bay at the Atlantic Ocean (Figure 1). In the northern portion of the Tocantins River Basin (mostly in Pará and Maranhão states), there is a transition from the Cerrado to the Amazon rainforest, the most representative biomes in South America (Silva and Bates 2002). In this contact zone, from northeast to southwest, the Cerrado covers plateaus while the Amazon rainforest covers mostly lower areas and depositional plains (Ab'Saber 2003).

The Cerrado, occupying most of the Tocantins River Basin, presents a rich, endemic, but threatened and poorly known anuran fauna (Myers et al. 2000; Silvano and Segalla 2005). In order to preserve the diversity of anurans in the Cerrado, Diniz-Filho et al. (2005) estimated priority areas for conservation, and concluded that Tocantins and Maranhão states would harbor important areas in need of further research and legal protection. Unfortunately, the Tocantins River Basin has been suffering significant human impacts; in 1998 almost half of its area (49 %) was already converted in croplands and cattle pastures (Costa et al. 2003), and most of the course of the river is already impacted by hydroelectric dams (seven under operation plus 12 projected; Brasil 2007).

Most of the localities sampled for anurans in the Cerrado were conducted during hydroelectric dams consulting (e.g. Pavan and Dixo 2004), and some in conservation units (e.g. Vitt 2002; 2005; Bastos et al. 2003; Brasileiro et al. 2005). In this study, we present a list of anurans from non-protected preserved and disturbed areas in the northern region of the Tocantins River Basin, with information regarding seasonality, habitat, and microhabitat use. This list may be an important contribution to the knowledge of the anuran fauna of the Cerrado and will provide information for conservation strategies in the region.

Material and methods

Study area

This study was conducted in the southwestern region of the state of Maranhão and northern area of the state of Tocantins, northern Brazil, comprising nine municipalities (Figure 1). The climate is classified as AW (tropical with dry

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winter) following Köppen. Precipitation is 1500-1800 mm per year and is strongly concentrated between October and March. Mean temperature is 32 ºC during dry season and 26 ºC during rainy season. The sampled area covered approximately 13,174 km^2. The sampled localities were chosen according to the monitoring plan of the herpeto-fauna during the construction of the *Ferrovia Norte-Sul*.

In the state of Maranhão (MA), observations were carried out in the municipalities of Açailândia, Imperatriz, Porto Franco, and Estreito. The vegetation in northern municipalities (Imperatriz and Açailândia) is characterized by fragments of secondary Amazon rainforest and mainly by crops of *Eucalyptus* sp. and pastures. In the southern area (between the municipalities of Imperatriz and Estreito), some fragments of mesophytic forest and Cerrado are located in a mosaic of pastures and other anthropic areas. Samplings were conducted in eleven localities, among which six were located at Açailândia (Fazenda Três Lagoas, Horto Pompéia, Pátio da Ferrovia Companhia Vale do Rio Doce – CVRD, Estrada do Sunil, Fazenda Boa Vista, and Fazenda Itabaiana), one in Imperatriz (Peixaria do Rio Maloca), three in Porto Franco (Fazendas Maravilha, Jacuba, and Nova), and one in Estreito (Fazenda Ituaneiras).

In the state of Tocantins (TO), observations were conducted in the municipalities of Aguiarnópolis, Darcinópolis, Wanderlândia, Babaçulândia, and Araguaína. Vegetation in this region consists mainly of extensive areas of preserved Cerrado (especially *campo cerrado* - grasslands and *cerrado sensu stricto* - savanna), in addition to fragments of mesophytic forests and strips of gallery forests along water courses. However, areas used for crops and small groups of livestock are expanding towards these natural areas. Samplings were conducted in 14 localities distributed in three sections: i) section Aguiarnópolis-Darcinópolis (Campo Cerrado, Cerrado *sensu stricto* AD, Mata Mesófila, Mata de Galeria, Povoado de Cascavel, Roads in Darcinópolis); ii) section Wanderlândia–Babaçulândia (unpaved road between two municipalities); iii) section Babaçulândia–Araguaína (Campo Cerrado BA, Fazendas Brejinho, Gregório, and Pamela; Estrada Araguaína-Babaçulândia; Eixo da Ferrovia Norte-Sul in Babaçulândia).

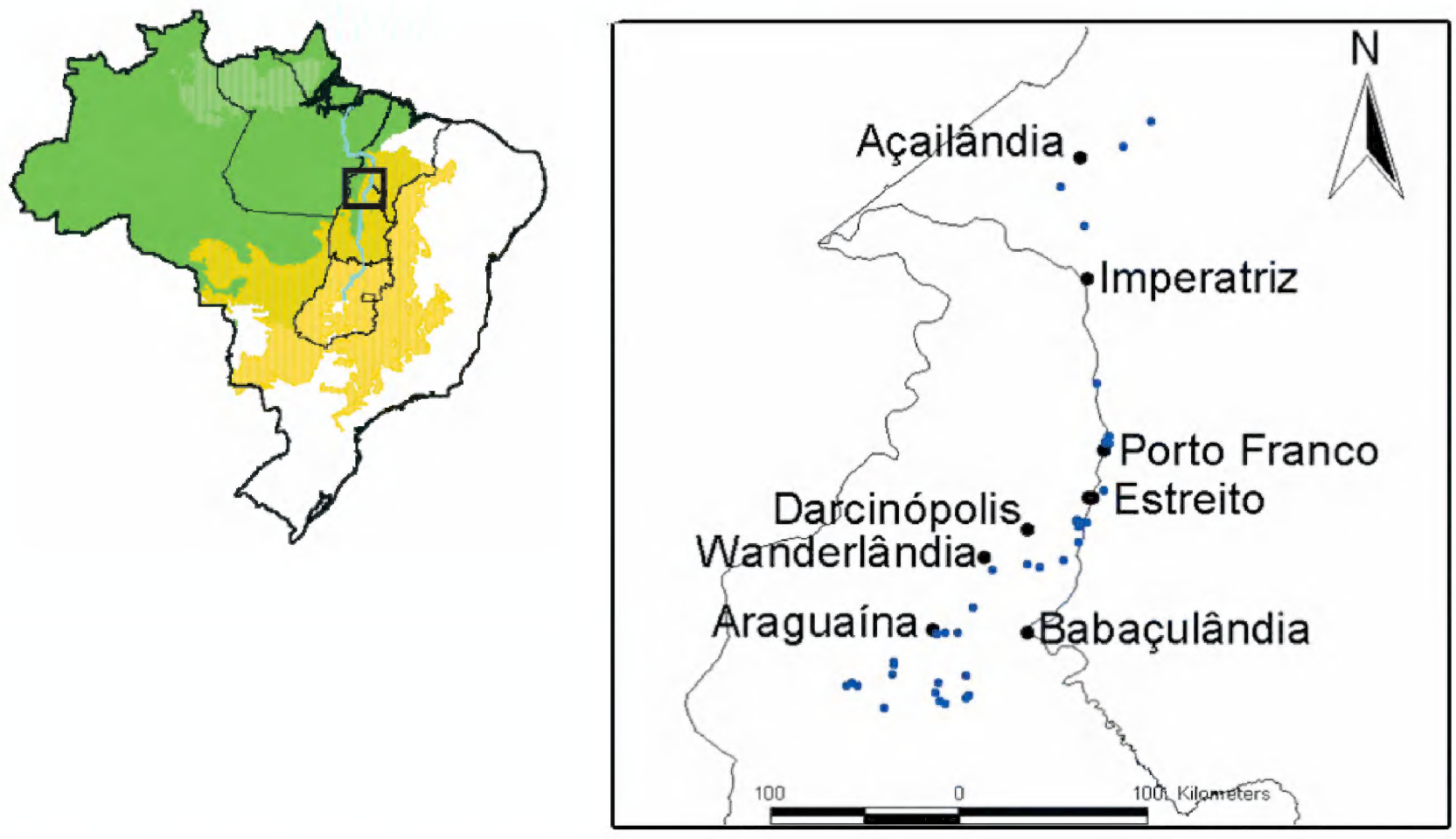

Figure 1. Study area in the Tocantins River Basin (rectangle), showing the distribution of the Cerrado biome (yellow) and the Amazonian Forest biome (green). Blue dots represent sampling sites.

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Below, description of each locality sampled:

A) Horto Pompéia, MA (04°05'35" S, 47°17'59" W). Fragment of disturbed secondary Amazon rainforest, with approximately 1,000 ha. Observations were conducted in temporary ponds in the fragment as well as in surrounding areas of *Eucalyptus* sp. and pastures (04°53'36" S, 47°17'57" W; 04°53'58" S, 47°16'32" W; 04°53'30" S, 47°16'25" W).
B) Fazenda Itabaiana, MA (05°05'03" S, 47°36'02" W). Observations were conducted in temporary ponds in a fragment of secondary Amazon rainforest, with approximately 1,000 ha, and surrounding areas characterized by *Eucalyptus* sp. and pastures (05°05'27" S, 47°35'18" W; 05°05'23" S, 47°33'56" W).
C) Pátio da Ferrovia CVRD, MA (04°57'02" S, 47°22'25" W). Observations were conducted in permanent and temporary water bodies along an unpaved road (04°57'02" S, 47°22'25" W; 04°58'00" S, 47°22'01" W; 04°58'27" S, 47°20'55" W).
D) Fazenda Três Lagoas, MA (04°46'21" S, 47°10'60" W). Observations were conducted in permanent and temporary water bodies in pastures.
E) Estrada do Sunil, MA (04°59'18" S, 47°29'29" W). Observations were conducted in permanent and temporary water bodies along an unpaved road connecting the city of Açailândia and the county district of Novo Oriente. The landscape consists mainly of pastures and some fragments of mesophytic forest.
F) Fazenda Boa Vista, MA This area is predominantly occupied by pastures. Observations were conducted in a permanent artificial pond and marshes formed by a small stream. A strip of gallery forest was observed in one of the sides of the stream.
G) Peixaria do Rio Maloca, MA. Observations were conducted at the margins of an artificial pond used for fish farming, located on the BR 010 road (km 227). The ponds were located in open areas and surrounded by exotic and native grasses.
H) Fazenda Maravilha, MA (06°00'38" S, 47°25'43" W). This area is located at km 196 of the road BR 010. Pitfalls were set up in a fragment of mesophytic forest (06°00'11" S, 47°25'63" W), with high trees, babassu palm trees (*Orbignya* sp.), dense understorey, and lianas. Leaf litter was abundant on the ground. Visual searches were conducted in permanent and temporary ponds, and marshes located mainly in open areas in pastures (06°00'62" S, 47°25'36" W).
I) Fazenda Jacuba, MA (06°16'24" S, 47°21'41" W). This area is located at km 166 on the road BR 010. Pitfalls were set up in a fragment of forest with medium height trees, dense shrubs and little leaf-litter covering the ground (06°16'21" S, 47°22'03" W). This fragment is located in a banana plantation. Visual searches were conducted in an artificial pond, a marsh, and a small permanent pond (06°16'17" S, 47°21'73" W) inside the fragment and at the banks of the Tocantins River.
J) Fazenda Nova, MA (06°18'06" S, 47°21'51" W). This area is located at km 162 on the road BR 010. Pitfalls were set up in two fragments characterized by not very dense mesophytic forest, and medium height trees with reduced diameter (06°18'04" S, 47°22'04" W and 06°17'42" S, 47°22'30" W). Fragments were located in a mosaic of pastures occupied by livestock.
K) Fazenda Ituaneiras, MA (06°31'49" S, 47°23'34" W). This area is located at km 135 on the road BR 010. Observations were conducted in a marsh located at the edge of the forest.
L) Campo Cerrado, TO (06°46'23" S, 47°31'01" W and 06°40'32" S, 47°30'31" W). Pitfalls were set up in this area. The landscape consists of preserved *campo cerrado* despite the presence of small groups of livestock. The soil is sandy and exposed, partially covered by native grass.
M) Cerrado *sensu stricto*, TO (06°42'06" S, 47°30'51" W). Pitfalls were set up in an area characterized mostly by *cerrado sensu stricto* and *cerradão*.
N) Mata Mesófila, TO (06°40'16" S, 47°31'30" W). Pitfalls were set up in a fragment of partially preserved forest with dense leaf-litter and open understorey in shaded area. During the period of study, approximately 50 % of the native vegetation was converted into soybean crops.
O) Mata de Galeria, TO (05°53'23" S, 43°16'10" W). Area located at the km 37 on the road BR 226 in the municipality of Darcinópolis. Observations were conducted in sections of forests in different levels of preservation. In most disturbed sections cattle and human settlements were observed.
P) Povoado de Cascavel, TO (06°48'03" S, 47°31'43" W). Small village located at the edge of a disturbed gallery forest.
Q) Mata de Galeria, TO (06°40'59" S, 47°28'42" W). Pitfalls were set up near a small stream. The

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vegetation is characterized by trees and babassu trees (*Orbignya* sp.) at the sides of the stream.
R) Unpaved road in Darcinópolis, TO. Observations were conducted in 13 water bodies along an unpaved road at Darcinópolis area (06°38'38" S, 47°34'06" W; 06°38'45" S, 47°34'03" W; 06°38'43" S, 47°33'32" W; 06°40'59" S, 47°30'31" W; 06°42'22" S, 47°44'26" W; 06°42'16" S, 47°43'02" W; 06°42'31" S, 47°42'40" W; 06°42'41" S, 47°38'56" W; 06°42'44" S, 47°38'35" W; 06°47'01" S, 47°35'39" W; 06°47'01" S, 47°35'12" W; 06°51'43" S, 47°45'19" W; 06°53'38" S, 47°41'59" W). Puddles formed mainly after heavy rains.
S) Unpaved road in Wanderlândia-Babaçulândia, TO. Sampling was conducted along a 60 km road connecting these cities. Along this road, vast and preserved areas of *cerrado* and *cerrado sensu stricto* are present. In some areas native grass of *campo cerrado* were replaced by *Bracchiaria* sp. or other pasture grass. Several *veredas* (typical streams and marshes with palm trees) are also present (06°52'52" S, 47°55'39" W; 06°54'08" S, 47°55'18" W; 07°08'11" S, 04°45'57" W) in which visual and acoustic searches were conducted.
T) Campo Cerrado AB, TO. This area was located near a paved road connecting Araguaína to Babaçulândia. It consists of a preserved campo cerrado, in which pitfalls were set up.
U) Fazenda Brejinho, TO (07°13'32" S, 47°55'24" W). Area located along the BR 153 (Araguaína - Babaçulândia). Pitfalls were set up in an area characterized mainly by *cerrado sensu stricto*.
V) Fazenda Gregório, TO (07°12'08" S, 47°49'58" W). This area is located along the BR 153 road. Pitfalls were set up in a mesophytic forest. Observations were conducted in a mesophytic forest and *cerrado*.
W) Fazenda Pamela, TO (07°20'42" S, 47°08'29" W). Active searches were conducted in gallery forests (*veredas*) and pastures.
X) Estrada Araguaína-Babaçulândia, TO. Observations were conducted in nine temporary ponds located along the BR 153 road (Araguaína-Babaçulância) (07°29'24" S, 48°11'54" W; 07°31'33" S, 48°09'30" W; 07°31'30" S, 48°09'05" W; 07°30'55" S, 48°03'08" W; 07°30'10" S, 48°02'24" W; 07°24'27" S, 48°02'55" W; 07°24'28" S, 48°02'06" W; 07°24'00" S, 47°08'40" W; 07°20'8" S, 47°08'34" W).
Z) Trecho da Ferrovia Norte–Sul, Babaçulândia, TO. Observations were conducted mainly in five ponds located at the outskirts of the city of Babaçulândia (07°05'03" S, 47°60'55" W; 07°11'07" S, 47°06'47" W; 07°12'40" S, 47°07'12" W; 07°12'8" S, 47°06'08" W; 07°12'22" S, 47°07'06" W).

Data collection

At MA, anurans were surveyed during 28 sampling days divided into four field periods: i) 06-12 January 2005; ii) 31 May to 06 June 2005; iii) 13-19 February 2006; and iv) 12-18 March 2007. At TO, surveys were also carried out in four field periods: i) 12-19 January 2005; ii) 07-12 June 2005; iii) 05-12 February 2006; and iv) 02-08 February 2007, totaling 29 sampling days.

In both states, four sampling methods were applied: pitfall traps, visual and acoustic surveys, searches by car, and incidental encounters (see Heyer et al. 1994). In MA, the total sampling effort was 1,090 pitfalls/day; 164 hours/man for visual and acoustic surveys, and 1,765 km for car surveys. For TO, sampling effort was 1,360 pitfalls/day, 170 hours/man for visual and acoustic surveys, and 2,065 km for searches by car.

Voucher specimens are deposited at the *Coleção de Anfíbios* (CFBH), *Departamento de Zoologia, Universidade Estadual Paulista*, Campus Rio Claro, state of São Paulo, Brazil (Appendix 1). We adopted the classification for Amphibia proposed by Frost et al. (2006) and Grant et al. (2006); for Hylidae, Faivovich et al. (2005); for Bufonidae, Chaparro et al. (2007); and for direct-developing frogs (Terrarana); Hedges et al. (2008).

Results and discussion

We recorded a total of 38 species in 15 genera and seven families at the study area (Tables 1 and 2). Hylid frogs accounted for the highest number of species (47 % of the total), followed by leptodactylids (24 %), leiuperids (10 %) and bufonids (8 %); other combined families accounted for 11 % of the species. The number of families and species (six and 33 respectively) were the same for Tocantins and Maranhão, although the latter had the highest number of genera (Figure 2).

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Table 1. Anurans from the southwestern portion of the state of Maranhão. Localities: A, Horto Pompéia; B, Fazenda Itabaiana; C, Pátio Vale do Rio Doce; D, Fazenda Três Lagoas; E, Estrada do Sunil; F, Fazenda Boa Vista; G, Peixaria do Rio Maloca; H, Fazenda Maravilha; I, Fazenda Jacuba; J, Fazenda Nova; and K, Fazenda Ituaneiras. Habitat: F, forest; OA, open areas; and EF, edge of forest. Microhabitat: LL, leaf litter; S, stream; TP, temporary pond; and PP, permanent pond. Season: D, dry season; and R, rainy season

Family	Species	Locality	Habitat	Microhabitat	Season
Bufonidae					
	Rhinella schneideri	A,B,C,D,E,F,H,K	OA	TP,PP	R
	Rhinella cf. *granulosa*	A,C	OA	TP	R
	Rhinella cf. *margaritifera*	A,F,I,K	F	LL	R
Dendrobatidae					
	Adelphobates galactonotus	A	F	LL	R
Hylidae					
	Dendropsophus melanargyreus	A,B,K	OA,EF	TP,PP	R
	Dendropsophus cf. *microcephalus*	C,D,E,F,H,I,G,K	OA,EF	TP,PP	R
	Dendropsophus minutus	A,B,C,D,I,G	OA	TP,PP	R
	Dendropsophus nanus	C,F,H,I,K	OA	TP,PP	R
	Dendropsophus leucophyllatus	I,K	OA,EF	TP,PP	R,D
	Hypsiboas geographicus	K	OA,EF	PP	D
	Hypsiboas multifasciatus	D,F,I,K	OA	TP,PP	R,D
	Hypsiboas punctatus	G,K	OA,EF	TP,PP	R,D
	Hypsiboas raniceps	A,C,D,H,I,K	OA,EF	TP,PP	R,D
	Phyllomedusa hypochondrialis	A,B,C,D,E,F,H,I,J	OA	TP,PP	R
	Pseudis tocantins	H	OA	PP	R,D
	Scinax fuscovarius	F	OA	TP	D
	Scinax fuscomarginatus	G,H,K	OA	PP	R
	Scinax nebulosus	C,D,F,H,I,J,G,K	OA,EF	PP	R
	Scinax cf. *x-signatus*	A,B,F,H	OA	TP,PP	R
	Trachycephalus venulosus	K	EF	PP	R
Leiuperidae					
	Eupemphix nattereri	A,E,J	OA	TP	R
	Physalaemus centralis	H,I	OA	TP,PP	R
	Physalaemus cuvieri	A,B,C,D,E,F,H,I,J,G	OA,EF	TP,PP	R,D
	Pseudopaludicola cf. *mystacalis*	C,D,H,J	OA,EF	TP	R, D
Leptodactylidae					
	Leptodactylus fuscus	A,D,F,E,H,I	OA	TP	R
	Leptodactylus labyrinthicus	H,J,G	OA,EF	TP,PP	R, D
	Leptodactylus macrosternum	D,H,I,K	OA	TP,PP	R, D
	Leptodactylus ocellatus	A,C,D,H,I,K	OA	TP,PP	R, D
	Leptodactylus podicipinus	H,I	OA,EF	TP,PP	R, D
	Leptodactylus troglodytes	C	OA	TP	R,D
	Leptodactylus vastus	C	OA	PP	D
Microhylidae					
	Dermatonotus muelleri	A	OA	PP	R
	Elachistocleis cf. *ovalis*	H, I	OA	TP,PP	R

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Table 2. Anurans from the northern portion of the state of Tocantins. Localities: L, Campo Cerrado AD; M, Cerrado *sensu stricto* AD; N, Mesophylus Forest; O, Gallery Forest; P, Povoado de Cascavel; Q, Mata de Galeria; R, Estrada de Darcinópolis; S, Estrada Wanderlândia-Babaçulândia; T, Campo Cerrado BA; U, Fazenda Brejinho; V, Fazenda Gregório; W, Fazenda Pamela; X, Estrada Araguaína-Babaçulândia; and Z, Eixo Ferrovia Norte-Sul at Babaçulândia. Habitat: F, forest; OA, open areas; and EF, edge of forest. Microhabitat: LL, leaf litter; S, stream; TP, temporary ponds; and PP, permanent pond. Season: D, dry season; and R, rainy season.

Family	Species	Locality	Habitat	Microhabitat	Season
Strabomantidae					
	Pristimantis cf. *fenestratus*	Z	F	LL	R
Bufonidae					
	Rhinella cf. *granulosa*	P,W	OA	TP	R
	Rhinella schneideri	P,U	OA,EF	TP,PP	R
	Rhinella cf. *margaritifera*	W	F	LL	R
Hylidae					
	Dendropsophus melanargyreus	L,U,W	OA,EF	TP,PP	R
	Dendropsophus cf. *microcephalus*	L,S,T,U,V,L	OA,EF	TP,PP	R,D
	Dendropsophus minutus	L,Q,R,S,T,U,V,W	OA,EF	TP,PP	R,D
	Dendropsophus nanus	L,S,T,U,V,L	OA,EF	TP,PP	D
	Dendropsophus rubicundulus	L,S,T,U,V,L	OA,EF	TP,PP	D
	Hypsiboas multifasciatus	L,Q,R,S,T,U,V,W	OA,EF	TP,PP	R,D
	Hypsiboas punctatus	L,U,W	OA	TP,PP	R,D
	Hypsiboas raniceps	R,S,U,W,X	OA	TP,PP	R,D
	Hypsiboas wavrini	L	OA	S	D
	Phyllomedusa hypochondrialis	R,S,U,W,X	OA	TP	R
	Scinax fuscovarius	L,P,R,S	OA	TP	R,D
	Scinax fuscomarginatus	P,R,S	OA	TP	R
	Scinax nebulosus	S,X,Z	OA,EF	TP,PP	R,D
	Scinax cf. *x-signatus*	L,P	OA	TP	R
	Trachycephalus venulosus	S	OA,EF	TP,PP	R,D
Leiuperidae					
	Eupemphix nattereri	O,Z	OA	TP	R
	Physalaemus centralis	O,Z	OA,EF	PT	R,D
	Physalaemus cuvieri	L,M,N,P,R,T,U,VX	OA,EF	TP,PP	R,D
	Pseudopaludicola cf. *mystacalis*	R,S,T,V,W	F,OA,EF	LL,TP,PP	R,D
Leptodactylidae					
	Leptodactylus fuscus	P,R,S,U,X,Z	OA,EF	TP	R,D
	Leptodactylus hylaedactylus	P	F,EF	LL	R,D
	Leptodactylus labyrinthicus	L,P,R,S,T,W,X	OA	TP,PP	R,D
	Leptodactylus macrosternum	L,P,R,S,T,W,X,Z	OA	TP,PP	R,D
	Leptodactylus mystaceus	Q	F	LL	R
	Leptodactylus ocellatus	L,T,W	OA	TP,PP	R,D
	Leptodactylus podicipinus	R,S,Z	OA	LL,TP,PP	R,D
	Leptodactylus troglodytes	P	OA	TP	R
Microhylidae					
	Dermatonotus muelleri	R	OA	PP	R
	Elachistocleis cf. *ovalis*	P,R,S	OA	TP,PP	R,D

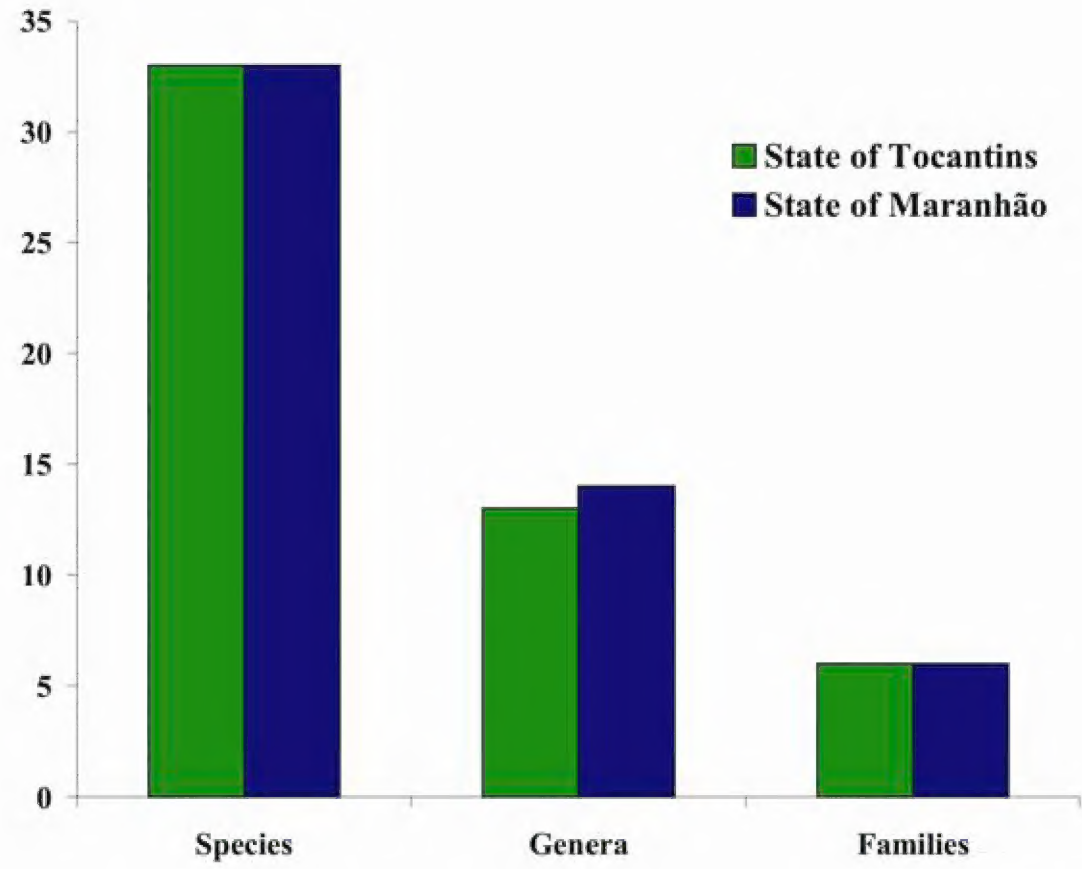

Figure 2. Number of species, genera, and families recorded in the states of Tocantins and Maranhão.

Approximately 79 % of species occurred in both states, but *Pristimantis* cf. *fenestratus, Hypsiboas wavrini*, and *Leptodactylus mystaceus* were found exclusively in TO, whereas *Adelphobates galactonotus*, *Dendropsophus leucophyllatus, Hypsiboas geographicus, Leptodactylus vastus*, and *Pseudis tocantins* were sampled only in MA. Most of these species have a broad distribution and probably occur in the entire study area (Frost 2007). The reason for not observing them in both states might be due to climate conditions during sampling days. On the other hand, *Adelphobates galactonotus* is known to occur in the Amazon region and probably does not occur in the state of Tocantins, since the vegetation is mainly composed by Cerrado in the latter. *Leptodactylus vastus* is known to occur in northeastern Brazil; since this species was recorded in the state of Maranhão (present study), a few kilometers from Tocantins, probably may also occur in the other state.

Regarding habitat, most species sampled (47 %) were observed only in open areas; 37 % of the species were found in open and at the edges of forests; 11 % were observed only in forests, and approximately 5 % were found at the edges of forests, inside the forests, and open areas. Regarding microhabitat use, most species (45 %) were sampled in permanent ponds as well as temporary ones, 24 % occurred only in temporary ponds; 11 % were present only in permanent ponds, 13 % occurred in the leaf-litter, and only 7 % occurred in streams. Most species (54 %) were observed both in the rainy and dry seasons; 33 % were observed only during the rainy season, and only 13 % were observed only during the dry season.

Up to 2002, 113 anurans were known to occur in the Cerrado (Colli et al. 2002), from which 32 are endemic. Our inventory comprises around 34 % of the anuran species reported for this biome, representing a higher local diversity compared to other inventories in surrounding localities. Barreto et al. (2007) reported 23 species of anurans in the basin of the Balsas River (Southern Maranhão). In Tocantins, 31 species of anurans are known to occur in the Jalapão region (Vitt et al. 2002; 2005).

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Figure 3. Some species of anurans from northern Tocantins River Basin: A, *Rhinella* cf. *granulosa* (TO); B, *Rhinella schneideri* (MA); C, *Rhinella* cf. *margaritifera* (MA); D, *Adelphobates galactonotus* (MA); E, *Dendropsophus melanargyreus* (TO); F, *Dendropsophus* cf. *microcephalus* (TO); G, *Dendropsophus minutus* (MA); H, *Dendropsophus nanus* (MA).

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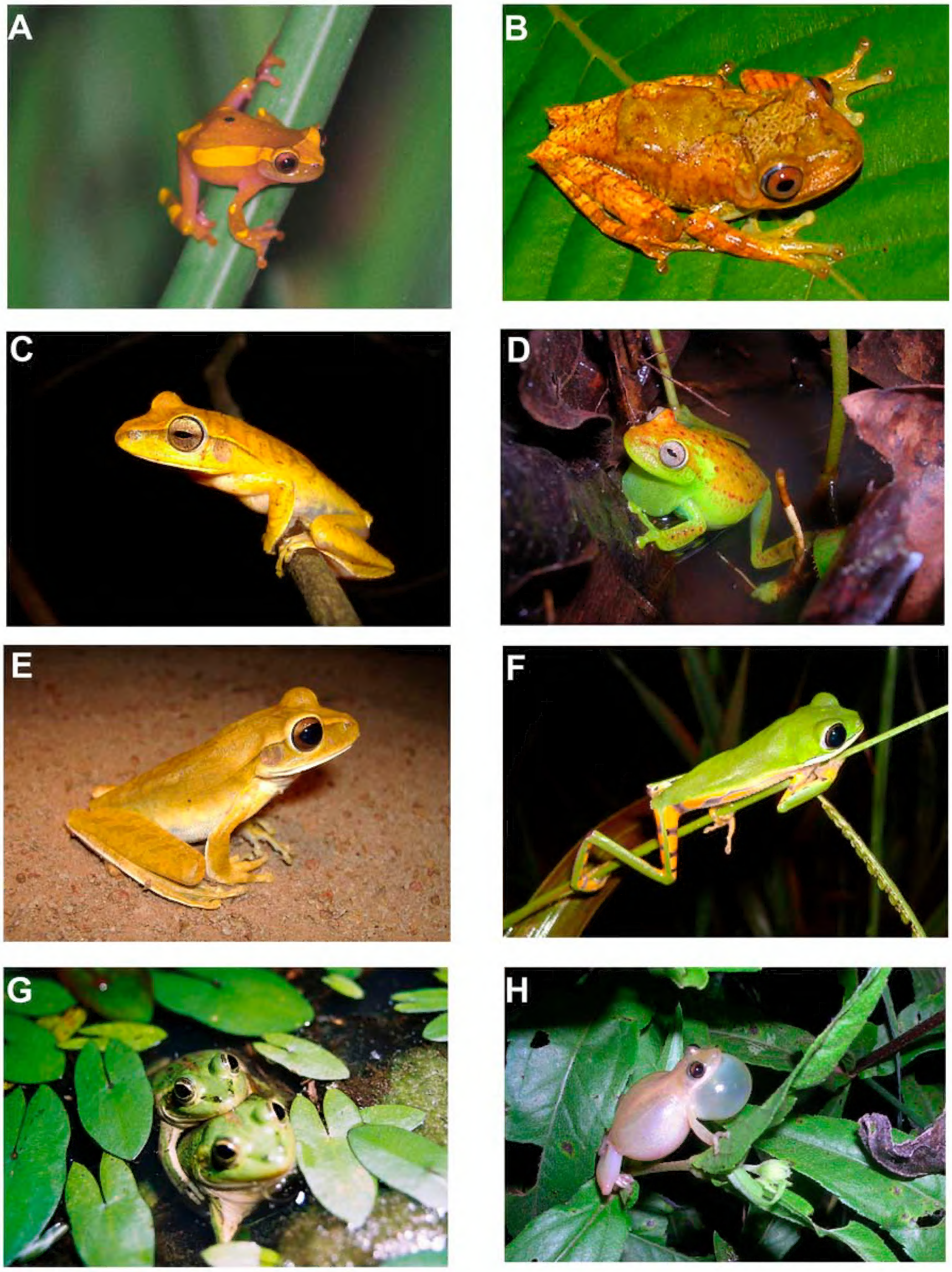

Figure 4. Some species of anurans of northern Tocantins River Basin: A, *Dendropsophus leucophyllatus* (MA); B, *Hypsiboas geographicus* (MA); C, *Hypsiboas multifasciatus* (MA); D, *Hyspsiboas punctatus* (TO); E, *Hypsiboas raniceps* (MA); F, *Phyllomedusa hypochondrialis* (TO); G, *Pseudis tocantins* (MA); H, *Scinax fuscomarginatus* (TO).

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Figure 5. Some species of anurans of northern Tocantins River Basin: A, *Scinax nebulosus* (TO); B, *Scinax* cf. *x-signatus* (TO); C, *Eupemphix nattereri* (TO); D, *Physalaemus cuvieri* (MA); E, *Pseudopaludicola* cf. *mystacalis* (MA); F, *Leptodactylus fuscus* (MA); G, *Leptodactylus macrosternum* (MA); H, *Leptodactylus podicipinus* (MA).

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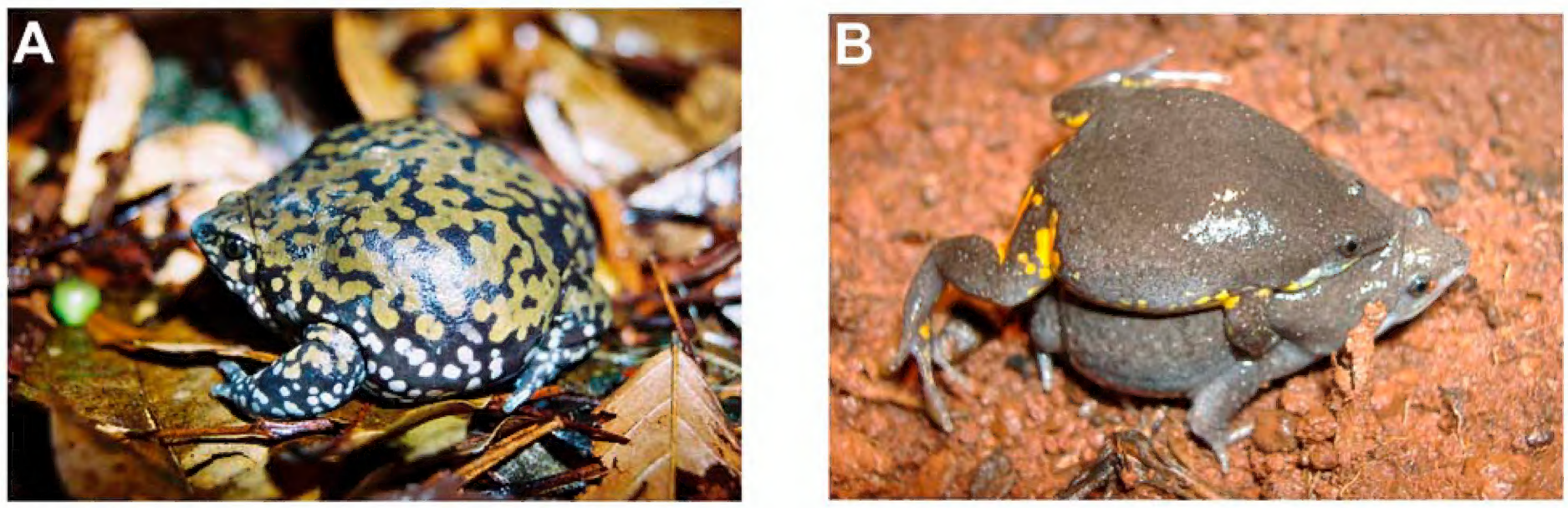

Figure 6. Some species of anurans of north basin Tocantins River: A) *Dermatonotus muelleri* (MA); B) *Elachistocleis* cf. *ovalis* (MA).

Our inventory is an important addition to the knowledge of the anurans of the Cerrado biome, from a region still poorly studied and with scattered information on the ecology and composition of local frogs. This region has been rapidly converted into agricultural crops, especially soybean. Thus, any data and information from reports carried out in the region should be published in order to provide the framework often necessary to develop conservation strategies to preserve different habitats and its biodiversity.

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Appendix 1: Voucher specimens.

STATE OF MARANHÃO:

Açailândia: *Adelphobates galactonotus* (CFBH 15624-5); *Rhinella* cf. *granulosa* (CFBH 11469-70); *Rhinella schneideri* (CFBH 11413); *Dermatonotus mulleri* (CFBH 11411-2, 11472); *Dendropsophus melanargyreus* (CFBH 11457); *Dendropsophus* cf. *microcephalus* (CFBH 15628-31); *Dendropsophus nanus* (CFBH 11463, 15632); *Eupemphix nattereri* (CFBH 11460); *Leptodactylus fuscus* (CFBH 11471); *Leptodactylus hylaedactylus* (CFBH 11462); *Leptodactylus troglodytes* (CFBH 11461); *Leptodactylus vastus* (CFBH 15622); *Hypsiboas multifasciatus* (CFBH 8116-9); *Phyllomedusa hypochondrialis* (CFBH 11458, 15623); *Physalaemus cuvieri* (CFBH 11459); *Scinax nebulosus* (CFBH 8120,11464, 15626-7).

Imperatriz: *Dendropsophus leucophyllatus* (CFBH 8128-9); *Dendropsophus* cf. *microcephalus* (CFBH 8124-7); *Hypsiboas punctatus* (CFBH 8121); *Scinax nebulosus* (CFBH 8122-3).

Porto Franco: *Dendropsophus* cf. *microcephalus* (CFBH 8144); *Elachistocleis* cf. *ovalis* (CFBH 8135, 9198-9); *Eupemphix nattereri* (CFBH 8133-4); *Leptodactylus podicipinus* (CFBH 8137-8, 9170-85, 11456); *Hypsiboas raniceps* (CFBH 8130-1, 9186-94); *Physalaemus cuvieri* (CFBH 8139-41, 8196, 9204-7); *Phyllomedusa hypochondrialis* (CFBH 8142-8143); *Pseudis tocantins* (CFBH 8132, 9209, 11454-5); *Rhinella* cf. *margaritifera* (CFBH 8136, 9208); *Scinax* cf. *x-signatus* (CFBH 8146); *Pseudopaludicola* cf. *mystacalis* (CFBH 9195-7).

Estreito: *Rhinella schneideri* (CFBH 9158); *Hypsiboas geographicus* (CFBH 9165-9); *Hypsiboas punctatus* (CFBH 9159-61); *Scinax nebulosus* (CFBH 9162-4); *Rhinella* cf. *margaritifera* (CFBH 15633).

STATE OF TOCANTINS:

Aguiarnópolis: *Rhinella* cf. *granulosa* (CFBH 8153); *Dendropsophus melanargyreus* (CFBH 8151-2); *Eupemphix nattereri* (CFBH 8157); *Hypsiboas wavrini* (CFBH 9210); *Leptodactylus macrosternum* (CFBH 8211); *Leptodactylus troglodytes* (CFBH 8147-9); *Phyllomedusa hypochondrialis* (CFBH 8150); *Physalaemus cuvieri* (CFBH 8154-6); *Pseudopaludicola* cf. *mystacalis* (CFBH 8158-9, 8204); *Scinax fuscomarginatus* (CFBH 8160); *Scinax x-signatus* (CFBH 8161-2).

Araguaína: *Dendropsophus nanus* (CFBH 11430, 11439-40); *Dendropsophus* cf. *microcephalus* (CFBH 11436-8); *Dendropsophus minutus* (CFBH 11432); *Pristimantis* cf. *fenestratus* (CFBH 11415-7); *Eupemphix nattereri* (CFBH 11465-6); *Leptodactylus macrosternum* (CFBH 11414, 11428); *Leptodactylus podicipinus* (CFBH 11423, 11445-6); *Hypsiboas multifasciatus* (CFBH 11424); *Hypsiboas punctatus* (CFBH 11425, 11435); *Hypsiboas raniceps* (CFBH 11426-7, 11441); *Phyllomedusa hypochondrialis* (CFBH 11467); *Physalaemus cuvieri* (CFBH 11442); *Pseudopaludicola* cf. *mystacalis* (CFBH 11418-22); *Scinax fuscomarginatus* (CFBH 11431-3); *Scinax nebulosus* (CFBH 11434,11443); *Scinax x-signatus* (CFBH 11429).

Babaçulândia: *Rhinella* cf. *granulosa* (CFBH 11447-8); *Dendropsophus* cf. *microcephalus* (CFBH 11450); *Leptodactylus hylaedactylus* (CFBH 11405); *Phyllomedusa hypochondrialis* (CFBH 11449); *Physalaemus cuvieri* (CFBH 11473; 11401-4); *Rhinella* cf. *margaritifera* (CFBH 11398-400); *Trachycephalus venulosus* (CFBH 9247).

Darcinópolis: *Rhinella* cf. *granulosa* (CFBH 8166-7); *Leptodactylus mystaceus* (CFBH 8164); *Hypsiboas multifasciatus* (CFBH 8165).

Wanderlândia: *Dendropsophus melanargyreus* (CFBH 11451); *Leptodactylus macrosternum* (CFBH 11468); *Physalaemus centralis* (CFBH 11452).